Nuclear Power 2010

March 2002

Nuclear Power 2010 -- Overview

The Department believes it is critical to deploy new baseload nuclear generating capacity within the decade to support the National Energy Policy objectives of energy supply diversity and energy security. The Nuclear Power 2010 program is a joint government/industry cost-shared program to develop advanced reactor technologies and demonstrate new regulatory processes leading to initiation of private sector construction of new nuclear power plants in the United States in 2005 and operation of new nuclear plants in the United States by 2010.

Background

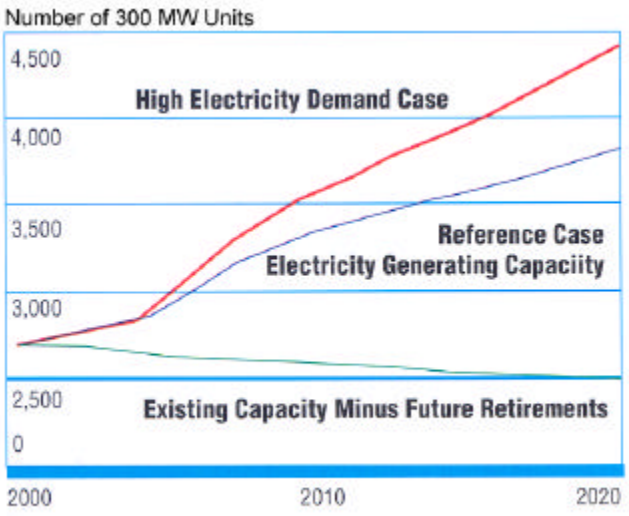
Electricity demand in the United States is expected to grow sharply in the 21st century requiring new generation capacity. Forecasts indicate that the United States will need about 393,000 megawatts of new generating capacity by 2020. This growth would require the United States to build between 1,300 and 1,900 new power plants over the next two decades. This averages to building and commissioning 60 to 90 new power plants per year.

To help meet this need for new baseload electricity generation, the National Energy Policy has recommended expansion of nuclear energy in the United States as a major component of our Nation's energy picture. To enable the deployment and operation of new, advanced nuclear power plants in the United States in the relatively near- term by the end of the decade it is essential to demonstrate the new, untested Federal regulatory and licensing processes for the siting, construction, and operation of new plant designs. In addition, independent expert analysis commissioned by the Department and carried out by the Nuclear Energy Research Advisory Committee (NERAC) has shown that the research and development on near-term advanced reactor concepts that offer enhancements to safety and economics is needed to enable these new technologies to come to market.

Roadmap For Deployment

In early fiscal year 2002, a Near-Term Deployment Working Group, operating under the direction of the Department's Nuclear Energy Research Advisory Committee, issued A Roadmap to Deploy New Nuclear Power Plants in the United States by 2010 which recommends actions to be taken by industry and the Department to support deployment of new advanced nuclear power plants in the United States by 2010. The recommendations of the near-term deployment roadmap, which have broad industry support, provide the basis for the activities of the Nuclear Power 2010 program.

Candidate reactor technologies identified by industry for near term deployment include both advanced water-cooled and gas-cooled reactor designs. Two reactor technology tracks will be pursued as water-cooled and gas-cooled reactors offer very different and complementary power generation characteristics (i.e., large base load and small incremental electricity supplies) and each has attracted support from different U.S. power generation companies in different regions of the country.



Source: NEP

A phased plan of action is proposed to achieve near term deployment and permit ongoing measurement of progress to achieve the program objective. This phased approach includes a Regulatory Demonstration phase; and a Design Completion phase. The Department will issue a competitively awarded procurements to cost-sharing joint venture project teams comprised of reactor vendors and power generation companies to implement the phased approach.

The Regulatory Demonstration phase is a parallel effort to demonstrate the previously untested Early Site Permit (ESP) and combined Construction/ Operating License (COL) regulatory processes to eliminate licensing uncertainties. The Department will also encourage utilities to coalese around the most promising nuclear plant technologies by supporting work to finalize and certify selected designs.

FY 2002 Accomplishments and Planned Activities

- Completed and issued A Roadmap to Deploy New Nuclear Power Plants in the United States by 2010.
- Continue the advanced gas-cooled reactor fuel qualification activities initiated in FY 2001 by implementing a cooperative agreement with U.S. industry and international partners for a fuel irradiation and qualification program; finalizing the gas-cooled reactor fuel irradiation, test and qualification planning; and completing the design and fabrication of the fuel irradiation test fixtures.
- Continue cooperation with the Nuclear Regulatory Commission (NRC) on the development of a gas reactor regulatory and licensing framework by completing the initial evaluation of the gas-cooled reactor technologies with the vendors and identifying the technical issues and research required to support licensing.
- Establish industry/government cooperative agreements to demonstrate the NRC Early Site Permit licensing processes (10 CFR Part 52) for the siting of nuclear power plants.

FY 2003 Planned Accomplishments

- Assemble the fuel irradiation test fixtures and initiate advanced gas-cooled reactor fuel irradiation at the INEEL Advanced Test Reactor as the next phase of the advanced gas reactor fuel qualification activities.
- Provide technical assistance to the NRC to complete the development of the regulatory and licensing framework required for contracting and operating advanced gas-cooled reactors in the U.S.
- Complete DOE-industry cost-shared Early Site Permit applications and submit the applications to NRC for review and approval.
- Initiate DOE-industry cost-shared demonstration project for the NRC's Combined Construction and Operating License application process.

Program Budget
Nuclear Power 2010[1]
($ in Millions)

FY 2001 Appropriation	FY 2002 Appropriation	FY 2003 Request
$3.0	$8.0	$38.5

[1]*Funding provided in the Nuclear Energy Technology Appropriation*

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